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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,520	02/19/2004	Bruce J. Clingerman	8540G-000184	4716
27572 7590 05/22/2007 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER CHUO, TONY SHENG HSIANG	
			ART UNIT 1745	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/782,520

Applicant(s)

CLINGERMAN ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7, 9-12 and 25-42 is/are allowed.
- 6) ☒ Claim(s) 13, 19-21 and 43-50 is/are rejected.
- 7) ☒ Claim(s) 14-18, 22-24 and 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1-7 and 9-51 are currently pending. Claims 1-7, 9-12, and 25-42 were previously allowed. The statement of common ownership does overcome the 103 rejections of claims 13, 19-21, 23, 24, and 43-50. Therefore, the 103 rejections of claims 13, 19-21, 23, 24, and 43-50 are withdrawn. However, upon further consideration, claims 13, 19-21, and 43-50 are rejected under the following new 102 and 103 rejections.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 43, 44, 47, 48, and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Raiser (US 2002/0064695). The Raiser reference discloses a fuel cell system comprising: a fuel cell stack; a 12 V auxiliary blower; and a high voltage compressor that is powered by the fuel cell stack once the fuel cell stack is producing sufficient power to keep the system operating (See paragraph [0009]).

Examiner's note: It is inherent that a fuel cell system comprises a fuel cell stack that has an anode side with an anode inlet and a cathode side with a cathode inlet, a hydrogen containing reactant source connected to the anode inlet, and a oxygen-

containing reactant source connected to the cathode inlet. It is also inherent that the oxygen containing reactant stream is ambient air. It is also inherent that a blower is connected to the cathode inlet and operable to supply oxygen-containing reactant from an oxygen containing reactant source to the cathode inlet and a compressor is connected to the cathode inlet and operable to supply oxygen containing reactant from the oxygen containing reactant source to the cathode inlet. It is also inherent that a lower voltage blower is powered by a low voltage power source.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (US 2002/0064695) in view of Hamada et al (US 5314762).

The Raiser reference discloses a fuel cell system comprising: a fuel cell stack; a 12 V auxiliary blower; and a high voltage compressor (See paragraph [0009]).

Examiner's note: It is inherent that a fuel cell system comprises a hydrogen source connected to the anode inlet of a fuel cell stack and a oxygen source connected to the cathode inlet of the fuel cell stack. It is also inherent that during start-up, hydrogen is introduced to the anode inlet of the fuel cell stack for producing a voltage with the fuel cell stack.

However, Raiser does not expressly teach a method comprising: producing a voltage with the fuel cell stack utilizing the existing oxygen contained in the cathode side of the fuel cell stack and the hydrogen introduced to the anode inlet; operating the low voltage blower with the voltage produced by the fuel cell stack thereby supplying additional oxygen to the cathode inlet of the fuel cell stack via the blower; increasing the voltage produced by the fuel cell stack over time; and introducing hydrogen to the anode inlet that includes opening a valve to release hydrogen flow to the anode inlet, wherein the valve is opened manually or by an electronic solenoid. The Hamada reference discloses a method of starting up a fuel cell comprising: pre-generating electricity with the fuel cell "3" with the remaining air and hydrogen supplied from the hydrogen storage unit; driving the air supply fan "10" with the electricity produced by the fuel cell, thereby supplying additional oxygen to the cathode inlet of the fuel cell via the air supply fan; and increasing the voltage produced by the fuel cell as the fuel cell starts the generation of electricity (See column 3, lines 57-64). It also discloses a method comprising: opening the valve of the hydrogen storage unit "4" by the switch on the control panel (See column 3, lines 57-59). Examiner's note: It is well known in the art that a low voltage blower is interchangeable with an air supply fan in a fuel cell system. It is also well known in the art that a valve can be controlled either manually or by an electronic solenoid.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Raiser fuel cell system to include a method of fuel cell start-up comprising: producing a voltage with the fuel cell stack utilizing the

existing oxygen contained in the cathode side of the fuel cell stack and the hydrogen introduced to the anode inlet; operating the low voltage blower with the voltage produced by the fuel cell stack thereby supplying additional oxygen to the cathode inlet of the fuel cell stack via the blower; increasing the voltage produced by the fuel cell stack over time; and introducing hydrogen to the anode inlet that includes opening a valve to release hydrogen flow to the anode inlet, wherein the valve is opened manually or by an electronic solenoid in order to more efficiently utilize the power generated by the fuel cell to power internal components such as blowers.

6. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (US 2002/0064695) in view of Fuller et al (US 6068941). The Raiser reference is applied to claims 43 and 44 for reasons stated above. However, Raiser does not expressly teach a low voltage power source that is a battery. The Fuller reference discloses an air blower "30" that is powered by a battery (See column 3, lines 7-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Raiser fuel cell system to include a low voltage power source that is a battery in order to utilize a low voltage power source that is simple and cost effective.

7. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (US 2002/0064695) in view of Thomas et al (US 5670266). The Raiser reference is applied to claims 43 and 44 for reasons stated above. However, Raiser does not expressly teach a low voltage power source that is a capacitor. The Thomas reference discloses a power source that is a capacitor (See column 1, lines 14-15). Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Raiser fuel cell system to include a low voltage power source that is a capacitor in order to utilize a power source that is capable of delivering power in response to power pulses and spikes from the blower.

8. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raiser (US 2002/0064695) in view of Hamada et al (US 5314762). The Raiser reference is applied to claim 43 for reasons stated above. However, Raiser does not expressly teach a blower that is powered by the fuel cell stack. The Hamada reference discloses an air supply fan "10" that is powered by a fuel cell "3" during start-up (See column 3, lines 59-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Raiser fuel cell system to include a blower that is powered by the fuel cell stack in order to more efficiently utilize the power generated by the fuel cell to power internal components such as blowers.

Allowable Subject Matter

9. Claims 14-18, 22-24, and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Raiser as modified by Hamada et al teaches a fuel cell system comprising: a fuel cell stack; a 12 V auxiliary blower; and a high voltage compressor, wherein during start-up, hydrogen is introduced to the anode of the fuel cell stack for producing a voltage with the fuel cell stack; producing a voltage with the fuel cell stack utilizing existing oxygen contained in the cathode side of

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the fuel cell stack and the hydrogen introduced to the anode inlet; operating the low voltage blower with the voltage produced by the fuel cell stack, thereby supplying additional oxygen to the cathode inlet of the fuel cell stack via the blower; and increasing the voltage produced by the fuel cell stack over time. However, Raiser as modified by Hamada et al does not expressly teach a method of fuel cell start-up comprising: simultaneously operating the high voltage compressor and the low voltage blower with the voltage produced by the fuel cell stack, decreasing the operation of the blower over time as the voltage output of the fuel cell stack increases; ceasing operation of the blower when the voltage output of the fuel cell stack has reached a predetermined value; or ceasing operation of the blower when the voltage output of the fuel cell stack is sufficient to support operation of the compressor.

Response to Arguments

10. Applicant's arguments, see Remarks, filed 3/2/07, with respect to the rejection(s) of claim(s) 13, 19-21, 23, 24, and 43-50 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made in view of Raiser and Hamada et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC


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PRIMARY EXAMINER